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# **COSMIC GUERRILLA**

Operation, Maintenance  
and Service Manual

# **UNIVERSAL**

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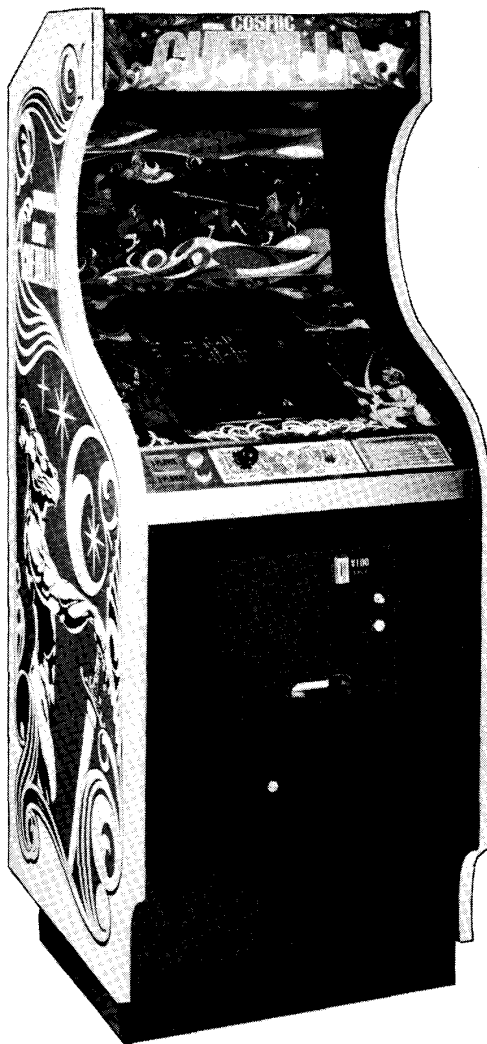
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### — WHEN ORDERING PARTS —

Since each component part is indicated by block, definitely specify both the corresponding Fig. No. and part No. within the Fig. when placing an order for it.

## **I. FEATURES OF THIS MACHINE**

1. The game packs in excellent features capturing the hearts of players.
2. The lever control system is simple to handle.
3. At the flick of a dip switch, you can select among extended play, the number of laser guns and time of appearance of an additional laser gun, etc.
4. High score for the day is always displayed on the screen.
5. Finely designed cabinet and fascinating acoustic effects.



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## **II. HOW TO HANDLE AND MAINTAIN THIS MACHINE**

1. Since the UNIVERSAL's COSMIC GUERRILLA employs a color TV receiving set, be careful not to shake it during transit and when carrying it about.
2. Install it at a location which is not exposed to direct sunlight. In order to prevent the inside temperature rising, avoid as much as possible a location near a heater, etc.
3. Since the grounding terminal is visible, be sure to connect it to a grounding conductor.
4. Insert the power cord into the outlet and turn on the switch.
5. Even if the solid-state module seems to be out of order, do not check the circuit by means of a circuit tester, etc., since the internal voltage of the tester, etc. may sometimes break down the IC.
6. Make sure the machine is well ventilated. If the temperature of the IC and transistor is lower than 60°C, they function normally and may be considered reliable. If it exceeds 60°C, their performance cannot be guaranteed.
7. Make sure that the connector, etc. is not disconnected.
8. Whenever connecting the power cord of the solid-state module to, or disconnecting it from, the outlet, be sure to turn the power off.
9. Although the products of UNIVERSAL are manufactured with the utmost care, they may develop malfunctions when used for long periods. So, be sure to check this machine daily.

### III. HOW TO PLAY

1. Drop in a coin when playing by yourself. Drop in two coins when playing with a friend.
2. When pressing either one- or two-player button after inserting a coin or two, the game starts. Play it by handling a lever for moving the laser guns from side to side and a FIRE button.
3. **UFO**  
UFO appears flying behind the guerillas as they race towards the front of the screen. Here's your chance to shoot the UFO down and add up points. But if you get too absorbed in it, you expose your laser guns to danger. When you hit the UFO, your score — either of 50, 100, 150 or 200 up to 300 points — is displayed at random.
4. **Guerillas**  
The guerilla rushes towards your block from both sides to take it away while bombing. When the block disappears, he tries to take away the central laser gun to his position. They are your targets. Wipe one off and your score piles up. Depending on the type of guerilla you get 20, 40, 50, 60 and 100. When you destroy all the guerillas on the screen, a new bunch of guerillas appears closer to your laser guns, making the game more and more difficult.
5. **Station**  
There are two stations for protecting your laser guns from the guerillas' direct assault. The point is to wipe off as many guerillas as possible. Your stations will be gradually destroyed by missiles launched by the guerillas. Be careful! As each new group of guerillas reappears, your destroyed stations come back on the screen.
6. **Laser guns**  
You can dodge the guerillas by moving your laser guns sideways with the lever controller knob. Press the FIRE button to launch the laser missiles. Hit a guerilla and it vanishes with a horrifying shriek. The key to mastering the game is skillful operation of the laser gun and well-timed missile launchings. When each laser gun is destroyed, a reserve gun at the left bottom of the screen appears and the game continues. (Play by turns when playing with a friend).
7. **Reserve guns**  
The remaining number of laser guns is displayed at all times. The game continues until all the laser guns are destroyed. If your score reaches a certain level, you are awarded another stock of laser gun as a bonus.  
  
— The number of laser guns and the setting of bonus points, etc. can be selected with dip switches.
8. **Block**  
It protects the central laser gun. If the guerilla is shot before he takes away the block, it returns to its location.
9. **Mutant mole**  
It appears every time you score 500 points, attacking your laser guns.

## IV. NOMENCLATURE OF EACH PART

### A. NOMENCLATURE OF CABINET PARTS

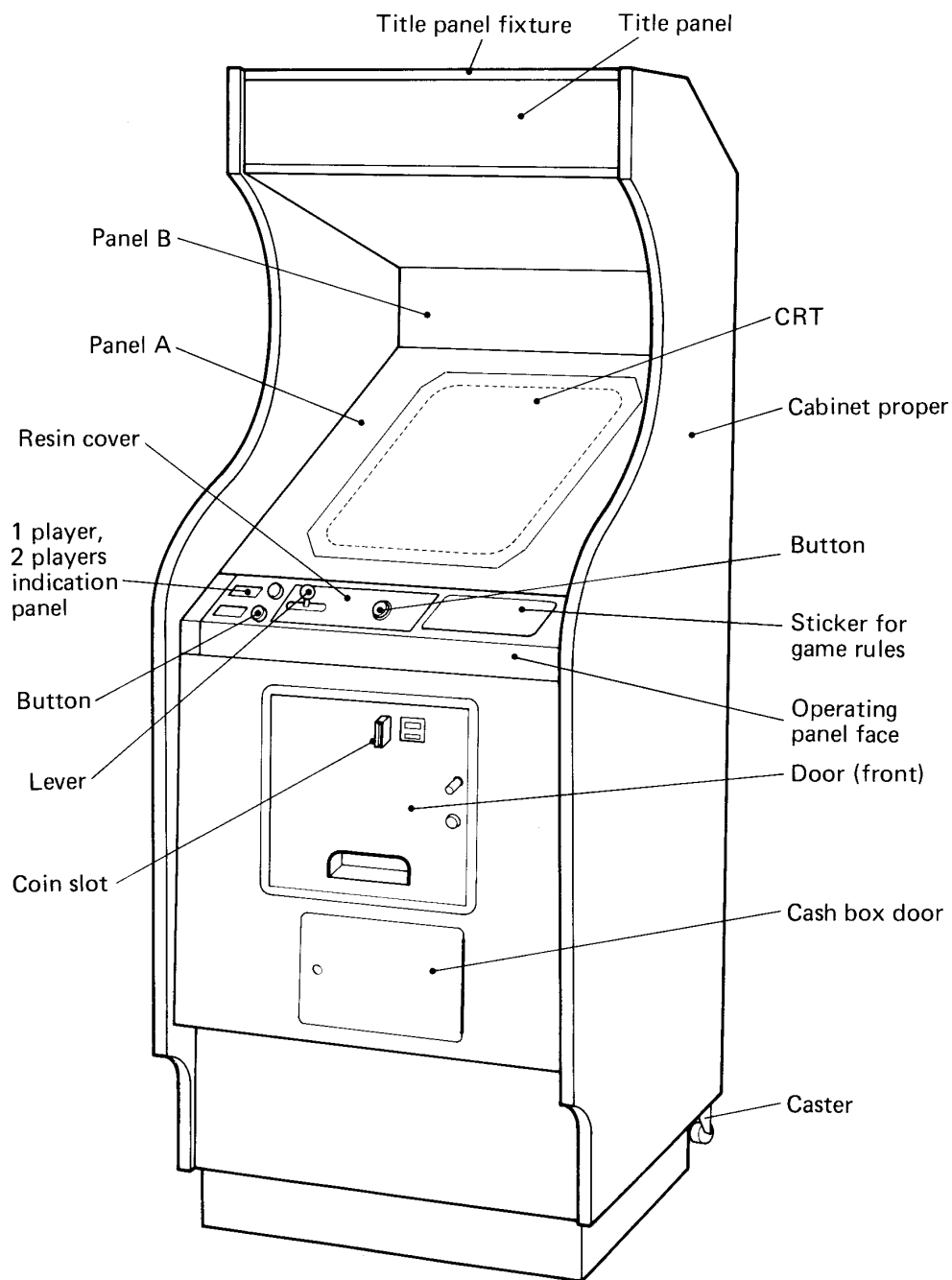
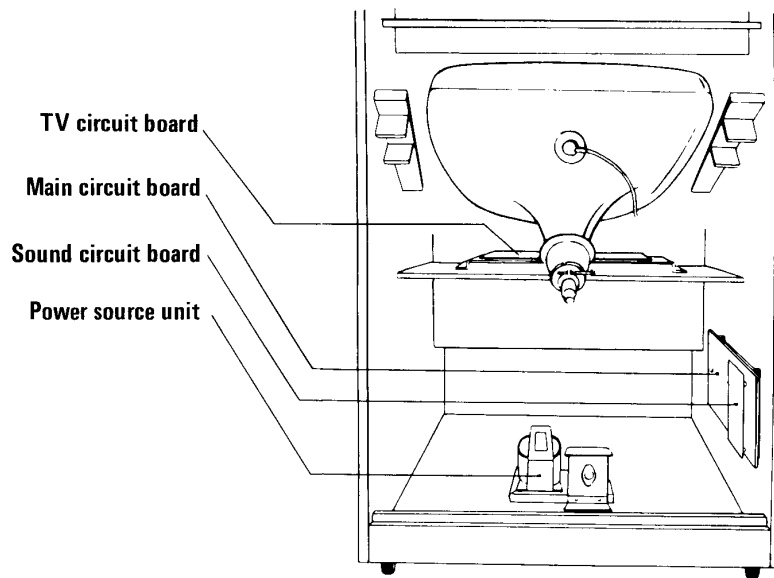


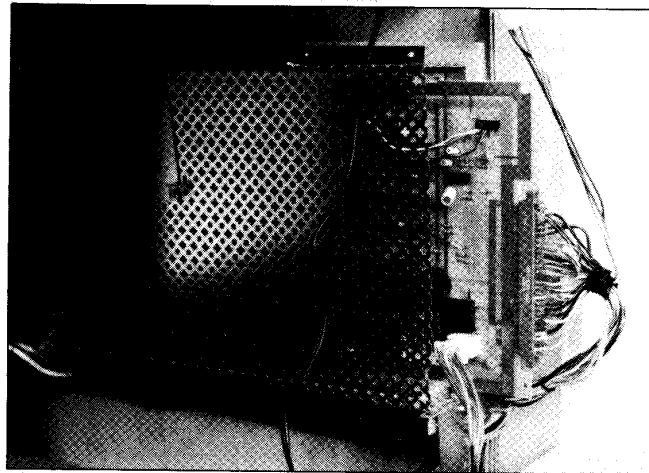
Fig. 1-1 Nomenclature of Cabinet Parts

## B. DRAWING OF CIRCUIT BOARD MOUTING POSITION



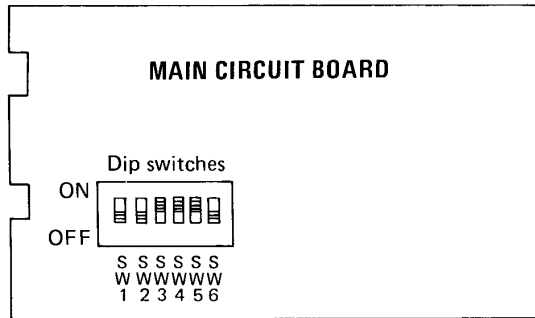
**Fig. 2-1 Circuit Board Mounting Positions**

**Main circuit board and its container**



**Fig. 2-2 Side View of Circuit Board Mounting Positions**

## C. POSITIONS OF DIP SWITCHES AND VOLUME CONTROLLER KNOBS



**Fig. 3-1** Positions of Dip Switches

### a) Setting the option (dip switches)

COSMIC GUERRILLA is designed to have various operations and options set by the ON-OFF combinations of the dip switches. When starting a game, choose any desired game option and set the dip switches accordingly.

#### 1. Setting the number of laser guns according to score: (Dip switches SW1, 2)

| Score | SW1 | SW2 |
|-------|-----|-----|
| 2000  | OFF | OFF |
| 1500  | ON  | OFF |
| 1000  | OFF | ON  |
| 0     | ON  | ON  |

(Set at 2,000 points when shipped)

#### 2. Setting the game charge:

| Credit         | SW3 |
|----------------|-----|
| 1 coin 1 play  | ON  |
| 1 coin 2 plays | OFF |

#### 3. Setting the number of laser guns:

| Number of laser guns | SW4 |
|----------------------|-----|
| 3                    | ON  |
| 5                    | OFF |

(Set at 3 laser guns when shipped)

**4. Change-over setting of the mode of game (SW5):**

The game may be enjoyed either as an upright or table type.

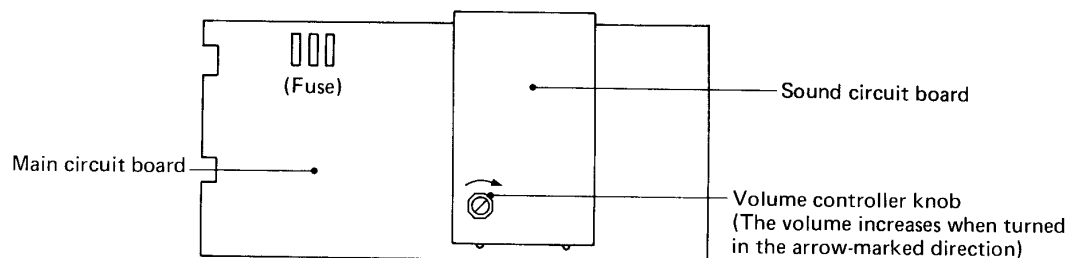
(When used as a table type for 2-player action, the table turns over.)

For upright use . . . . . ON

For table use . . . . . OFF

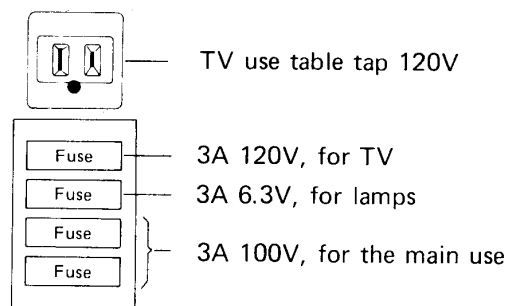
(Be sure to place SW6 in the OFF position at all times, since it is not related to the game.)

**b) Volume controller knob**



**Fig. 3-2 Position of Volume Controller Knob**

**c) Fuses in the power unit**



**Fig. 3-3 Fuses in the Power Unit**

## VI. PARTS CATALOG

### A-1 COMPONENT PARTS RELATED TO CABINET (OUTSIDE)

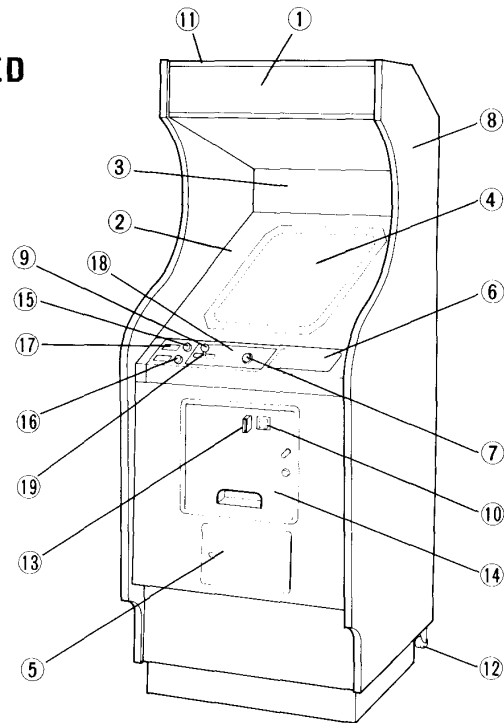
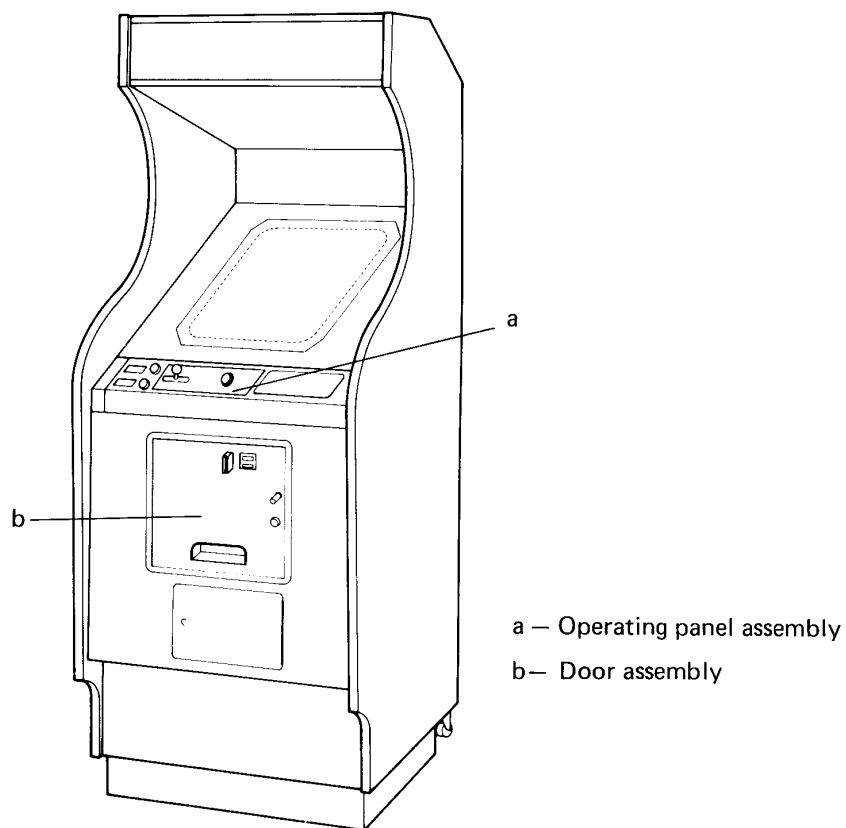


Fig. 5-1 Component Parts Related to Cabinet (Outside)

#### OUTSIDE CABINET PARTS LIST

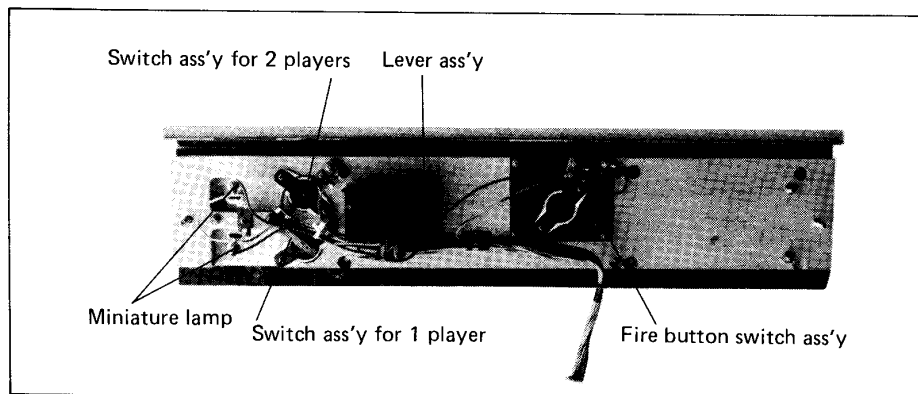
| Ref. No. | Name                            |
|----------|---------------------------------|
| 1        | Title panel                     |
| 2        | Illustrated glass A             |
| 3        | Illustrated glass B             |
| 4        | CRT                             |
| 5        | Cash box door                   |
| 6        | Sticker for game rules          |
| 7        | Push button (Fire)              |
| 8        | Cabinet proper                  |
| 9        | Knob 32-Dim.                    |
| 10       | Coin indication panel           |
| 11       | Title panel fixture             |
| 12       | Caster                          |
| 13       | Coin slot                       |
| 14       | Main door                       |
| 15       | Push button (1 player)          |
| 16       | Push button (2 players)         |
| 17       | 1 or 2 players indication panel |
| 18       | Lever indication panel          |
| 19       | Control lever ( general name)   |

## A-2 COMPONENT PARTS RELATED TO CABINET (INSIDE)



**Fig. 5-2 Component Parts Related to Cabinet (Inside)**

### a) Operating panel assembly



**Fig. 5-3 Operating Panel Assembly**

b) Door assembly

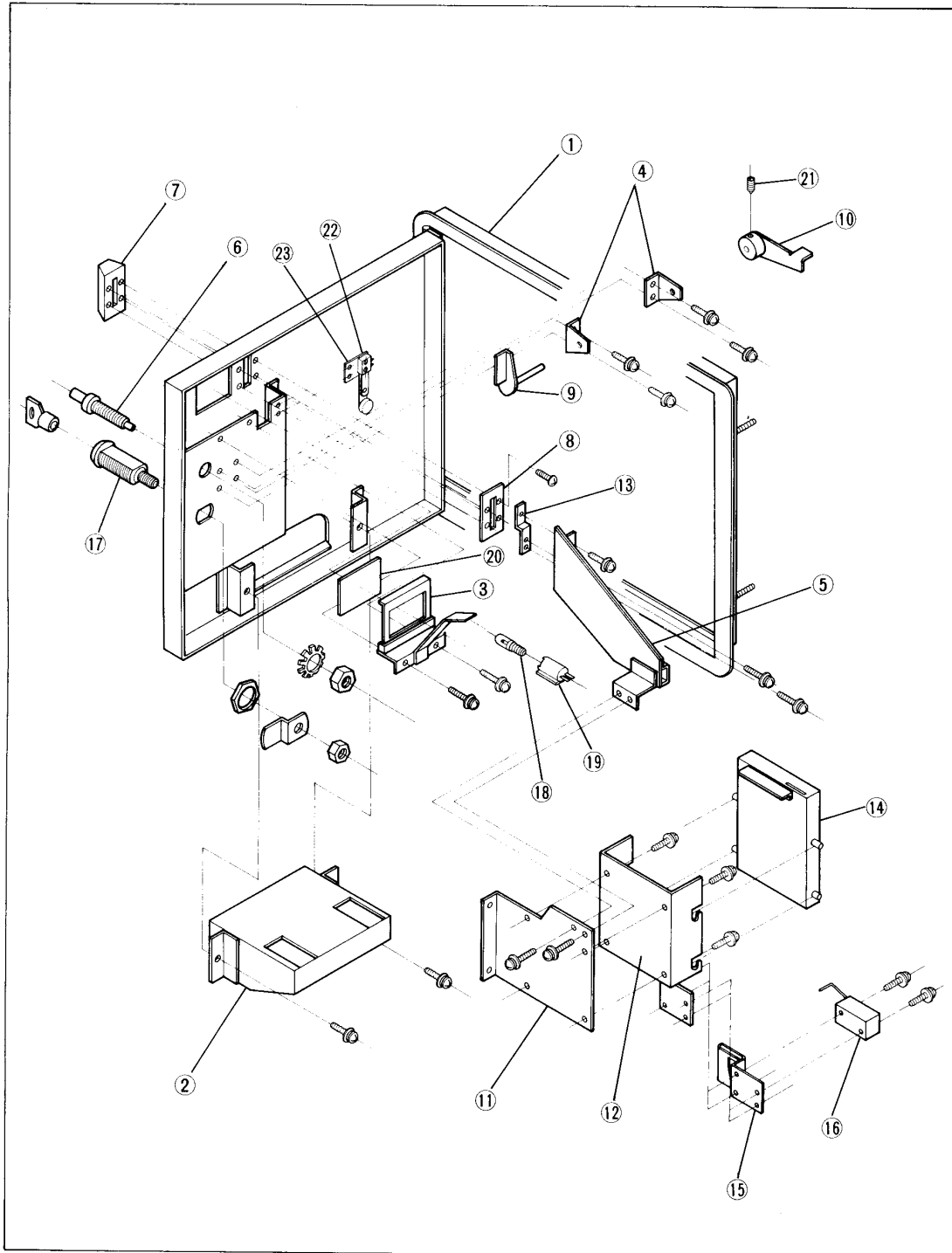


Fig. 5-4 Inside View of Rejector Assembly

**REJECTOR ASSEMBLY PARTS LIST**

| Ref. No. | Name                         |
|----------|------------------------------|
| 1        | Main door                    |
| 2        | Returning soucer             |
| 3        | Lamp & plastic plate bracket |
| 4        | Bearing                      |
| 5        | Coin slot shute              |
| 6        | Returning button             |
| 7        | Coin slot                    |
| 8        | Slot plate                   |
| 9        | Transmission shaft           |
| 10       | Rotary bracket               |
| 11       | Rejector bracket             |
| 12       | Rejector case                |
| 13       | Coin slot shute holder       |
| 14       | Rejector                     |
| 15       | Sensor slot                  |
| 16       | Micro switch                 |
| 17       | Key sets                     |
| 18       | Miniature lamp               |
| 19       | Miniature lamp socket        |
| 20       | Coin indication panel        |
| 21       | Hexagon socket head screw    |
| 22       | Slam switch                  |
| 23       | Slam switch holder           |

c) Lever assembly and parts list

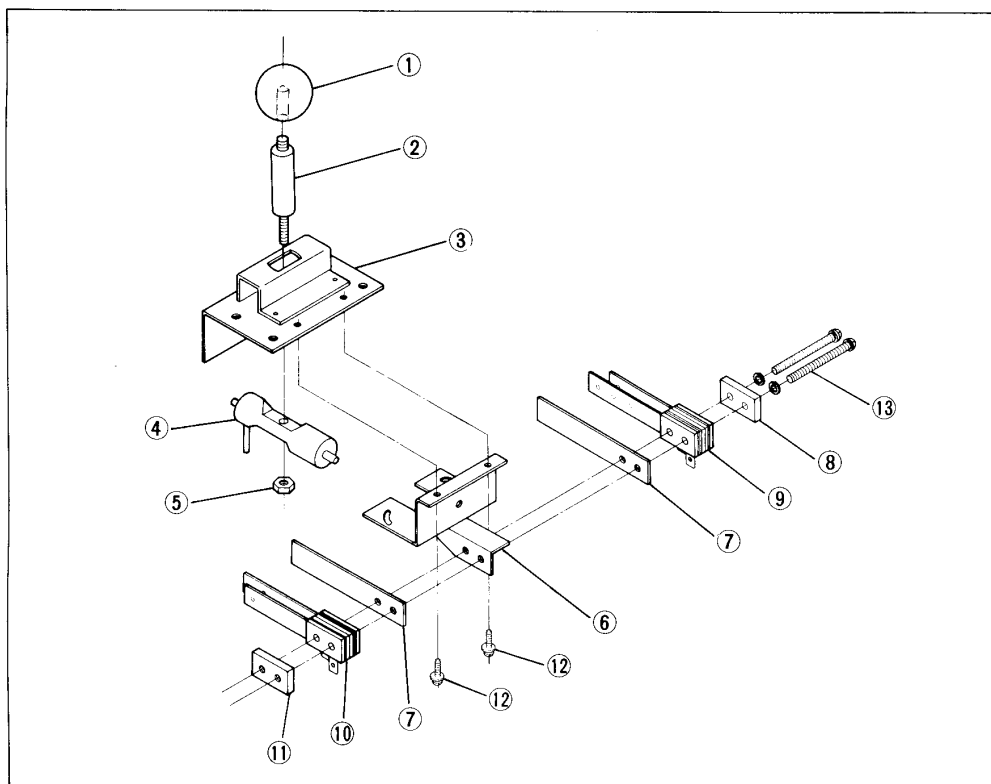
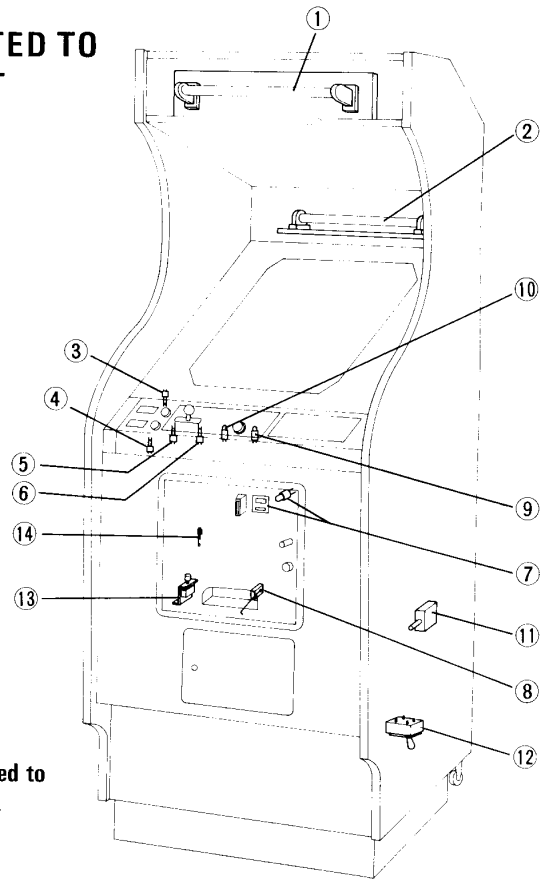


Fig. 5-5 Lever Assembly

LEVEL ASSEMBLY PARTS LIST

| Ref. No. | Name                   |
|----------|------------------------|
| 1        | Knob 32-Dim.           |
| 2        | Lever shaft            |
| 3        | Lever guide & stopper  |
| 4        | Transmission bar       |
| 5        | Nut with stopper       |
| 6        | Switch bracket         |
| 7        | Spring                 |
| 8        | Spring holder          |
| 9        | Blades switch          |
| 10       | Blades switch          |
| 11       | Spring holder with nut |
| 12       | Bolt                   |
| 13       | Bolt                   |

## B. COMPONENT PARTS RELATED TO SWITCHES IN THE CABINET



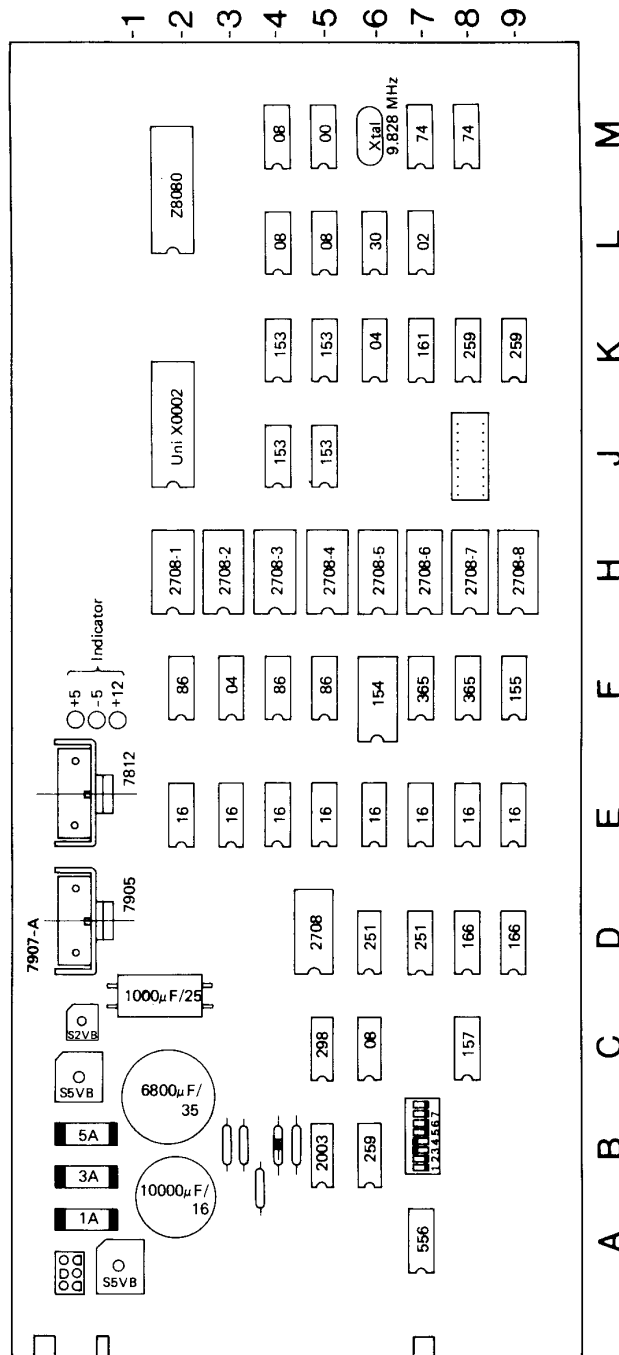
**Fig. 5-6 Component Parts Related to Switches in the Cabinet**

### INSIDE CABINET PARTS LIST

| Ref. No. | Name                     |
|----------|--------------------------|
| 1        | Fluorscent lamp assembly |
| 2        | Fluorscent lamp assembly |
| 3        | Blades switch            |
| 4        | Blades switch            |
| 5        | Blades switch            |
| 6        | Blades switch            |
| 7        | Miniature lamp assembly  |
| 8        | Micro switch             |
| 9        | Miniature lamp assembly  |
| 10       | Miniature lamp assembly  |
| 11       | Door switch              |
| 12       | Toggle switch            |
| 13       | Micro switch             |
| 14       | Slam switch              |

## C. CIRCUIT BOARD IC LOCATION AND PARTS LIST

### a) Main circuit board IC location



**b) Main circuit board parts list**
**[1] Integrated circuit**

| Item No.     | Q'ty | Description           |
|--------------|------|-----------------------|
| SN7400N      | 1    | Transistor Logic      |
| 02N          | 1    | "                     |
| 04N          | 3    | "                     |
| 08N          | 4    | "                     |
| 30N          | 1    | "                     |
| 74N          | 2    | "                     |
| 86N          | 3    | "                     |
| 125N         | 1    | "                     |
| 153N         | 4    | "                     |
| 154N         | 1    | "                     |
| 155N         | 1    | "                     |
| 157N         | 1    | "                     |
| 161N         | 1    | "                     |
| 166N         | 2    | "                     |
| 251N         | 2    | "                     |
| 259N         | 3    | "                     |
| 298N         | 1    | "                     |
| 365N         | 2    | "                     |
| NE 556N      | 1    | Dual timer            |
| TMS4116      | 8    | Nch mos 16k bits RAM  |
| TMM333       | 2    | Nch mos 32k bits ROM  |
| Z8080        | 1    | Nch mos CPU           |
| UN0002       | 1    | Nch mos CRTC          |
| $\mu$ A78H05 | 1    | +5V voltage regulator |
| $\mu$ A7812  | 1    | +12V "                |
| $\mu$ A7905  | 1    | -5V "                 |

**[2] Other semiconductor devices**

| Item No. | Q'ty | Description                      |
|----------|------|----------------------------------|
| ULN2003  | 2    | Darlington transistor array      |
| S5VB     | 2    | 5 Ampere rectifier bridge        |
| S2VB     | 1    | 2 Ampere "                       |
| TLR301   | 3    | LED (RED)                        |
| 1S1588   | 2    | Switching diode                  |
| RD7AN    | 1    | Zener diode (7.1–7.8V Avalanche) |

**[3] Capacitors**

| Rating              | Q'ty | Description        |
|---------------------|------|--------------------|
| 10,000 $\mu$ F/16WV | 1    | Chemical capacitor |
| 6,800 $\mu$ F/35WV  | 1    | "                  |
| 1,000 $\mu$ F/25WV  | 1    | "                  |
| 22 $\mu$ F/35WV     | 1    | "                  |
| 10 $\mu$ F/16WV     | 1    | "                  |
| 4.7 $\mu$ F/25WV    | 1    | "                  |
| 0.1 $\mu$ F/12WV    | 70   | Ceramic capacitor  |
| 0.01 $\mu$ F/12WV   | 1    | "                  |
| 100pF/12WV          | 1    | "                  |

**[4] Resistors**

| Rating               | Q'ty | Description                |
|----------------------|------|----------------------------|
| MS1028               | 2    | 1k $\Omega$ Resistor array |
| 200 k $\Omega$ 1/4 W | 1    | Carbon solid resistor      |
| 100 k $\Omega$ "     | 1    | "                          |
| 4.7 k $\Omega$ "     | 1    | "                          |
| 3 k $\Omega$ "       | 1    | "                          |
| 2 k $\Omega$ "       | 1    | "                          |
| 1.6 k $\Omega$ "     | 1    | "                          |
| 1.2 k $\Omega$ "     | 1    | "                          |
| 1 k $\Omega$ "       | 5    | "                          |
| 510 $\Omega$ "       | 8    | "                          |
| 330 $\Omega$ "       | 7    | "                          |
| 100 $\Omega$ "       | 1    | "                          |
| 10 $\Omega$ "        | 2    | "                          |

**[5] Misc**

| Name   | Q'ty | Description            |
|--------|------|------------------------|
| DIP SW | 1    | 8 element switch array |
| X'tal  | 1    | 9.828 MHz              |
| Fuse   | 1    | 1A                     |
| "      | 1    | 3 A                    |
| "      | 1    | 5 A                    |

c) Sound circuit board IC location, resistance setting and resistance location

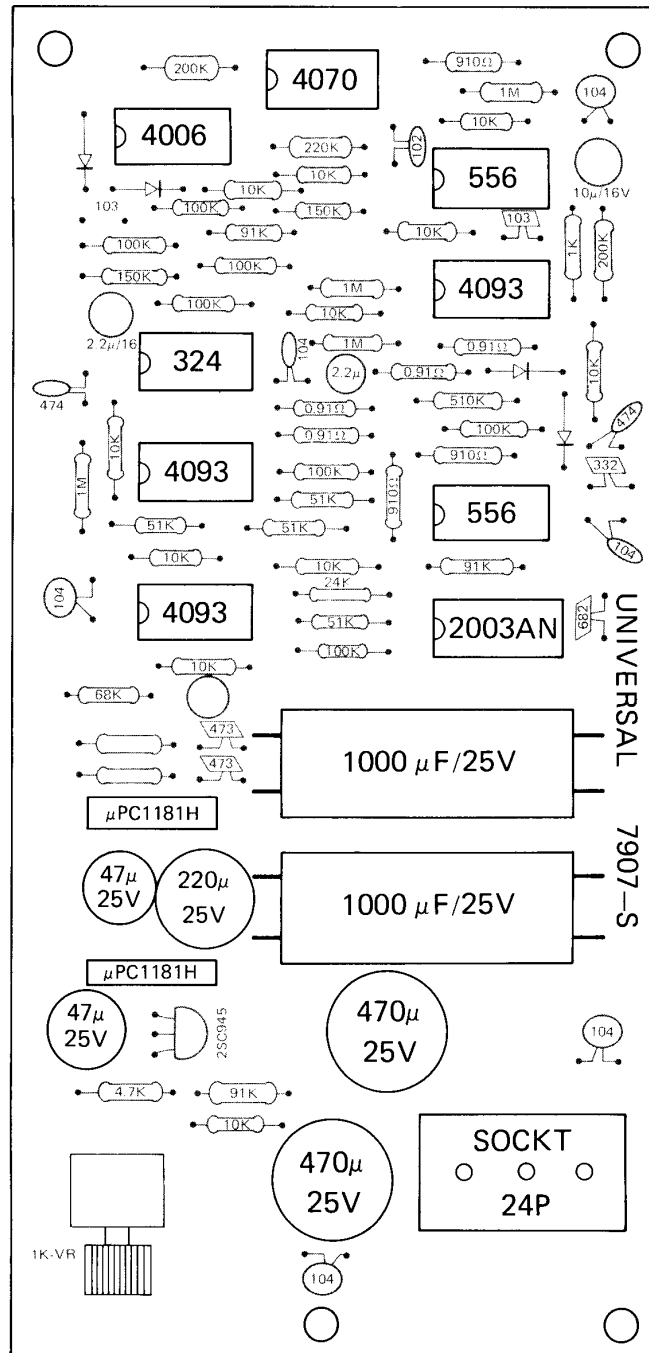


Fig. 7-2 Sound Circuit Board

## d) Sound circuit board parts list

### [1] Integrated Circuit

| Item No.     | Q'ty | Description                        |
|--------------|------|------------------------------------|
| LM324        | 1    | Quadruple Operational Amplifiers   |
| NE556        | 2    | Dual Timer                         |
| ULN2003      | 1    | Darlington Transistor Array        |
| CD4006       | 1    | 18-stage Static Shift Register     |
| CD4070       | 1    | Quad 2-Input EXCLUSIVE-OR Gate     |
| CD4093       | 3    | Quad 2-1Input NAND Schmitt Trigger |
| $\mu$ PC1181 | 2    | Power Amplifiers                   |

### [2] Other Semiconductor Devices

| Item No. | Q'ty | Description      |
|----------|------|------------------|
| 1S1588   | 4    | Switching Diode  |
| 2SC945   | 1    | N-P-N Transistor |

### [3] Capacitors

| Rating             | Q'ty | Description              |
|--------------------|------|--------------------------|
| 2.2 $\mu$ F 50WV   | 3    | Chemical Capacitor       |
| 10 $\mu$ F 16WV    | 1    | "                        |
| 47 $\mu$ F 25WV    | 2    | "                        |
| 220 $\mu$ F 25WV   | 2    | "                        |
| 470 $\mu$ F 25WV   | 2    | "                        |
| 1000 pF 12V        | 2    | Ceramic Capacitor        |
| 0.01 $\mu$ F 12V   | 1    | "                        |
| 0.1 $\mu$ F 12V    | 3    | "                        |
| 0.1 $\mu$ F 50V    | 1    | "                        |
| 0.0033 $\mu$ F 50V | 1    | Polyester Film Capacitor |
| 0.0068 $\mu$ F 50V | 1    | "                        |
| 0.01 $\mu$ F 50V   | 1    | "                        |
| 0.068 $\mu$ F 50V  | 2    | "                        |
| 0.47 $\mu$ F 12WV  | 4    | Tantalum Capacitor       |

### [4] Resistors

| Rating         | Q'ty | Description           |
|----------------|------|-----------------------|
| 1.5 $\Omega$   | 2    | Carbon Solid Resistor |
| 4.7 $\Omega$   | 1    | "                     |
| 100 $\Omega$   | 4    | "                     |
| 1 k $\Omega$   | 4    | "                     |
| 2.2 k $\Omega$ | 1    | "                     |
| 4.7 k $\Omega$ | 1    | "                     |
| 10 k $\Omega$  | 10   | "                     |
| 22 k $\Omega$  | 1    | "                     |
| 51 k $\Omega$  | 4    | "                     |
| 100 k $\Omega$ | 11   | "                     |
| 150 k $\Omega$ | 2    | "                     |
| 200 k $\Omega$ | 1    | "                     |
| 220 k $\Omega$ | 2    | "                     |
| 510 k $\Omega$ | 1    | "                     |
| 680 k $\Omega$ | 1    | "                     |
| 1 M $\Omega$   | 1    | "                     |

### [5] Misc

| Name                 | Q'ty | Description |
|----------------------|------|-------------|
| 24P Wire Wrap Socket | 1    |             |

## VII. WIRING DIAGRAM

### a) Wiring diagram (connector)

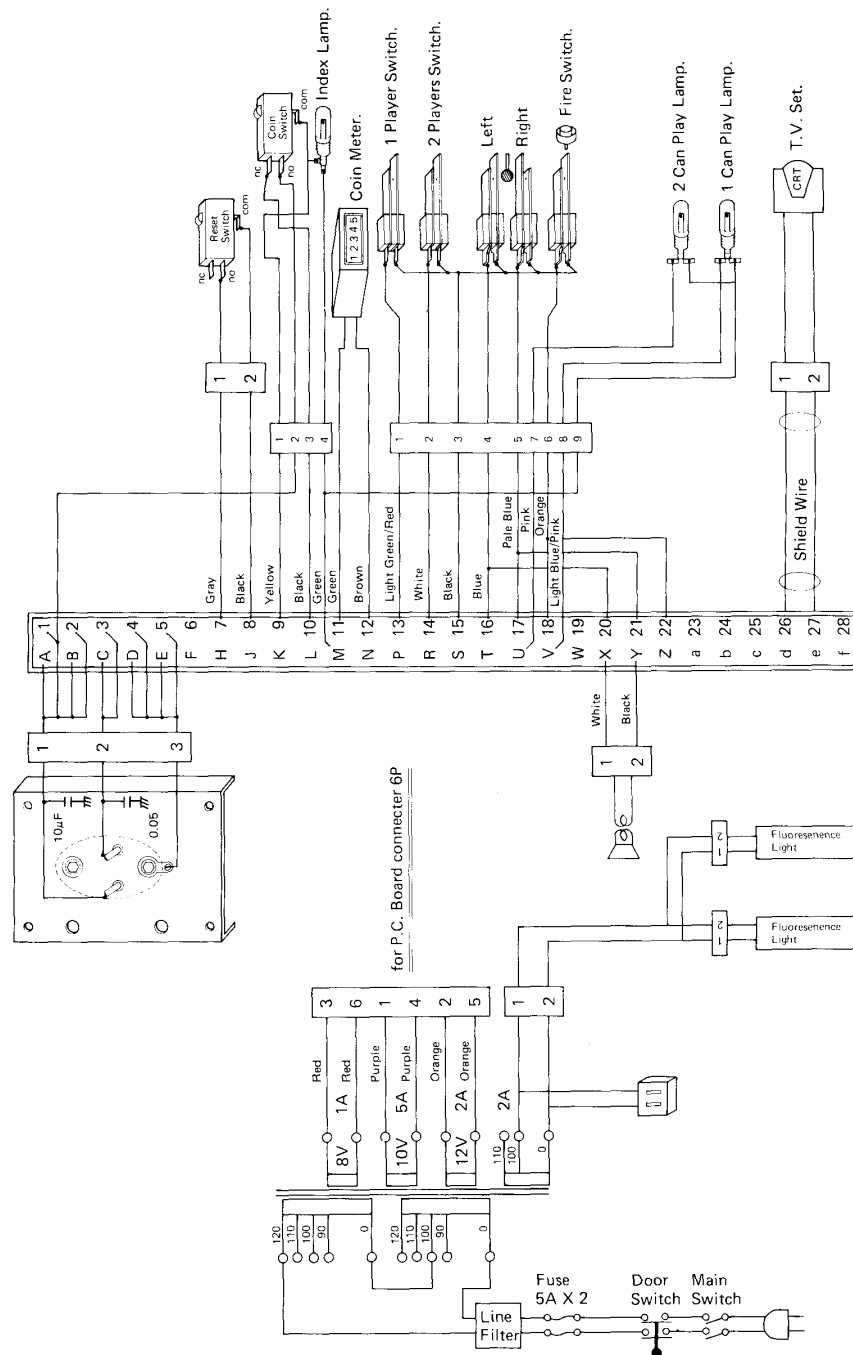
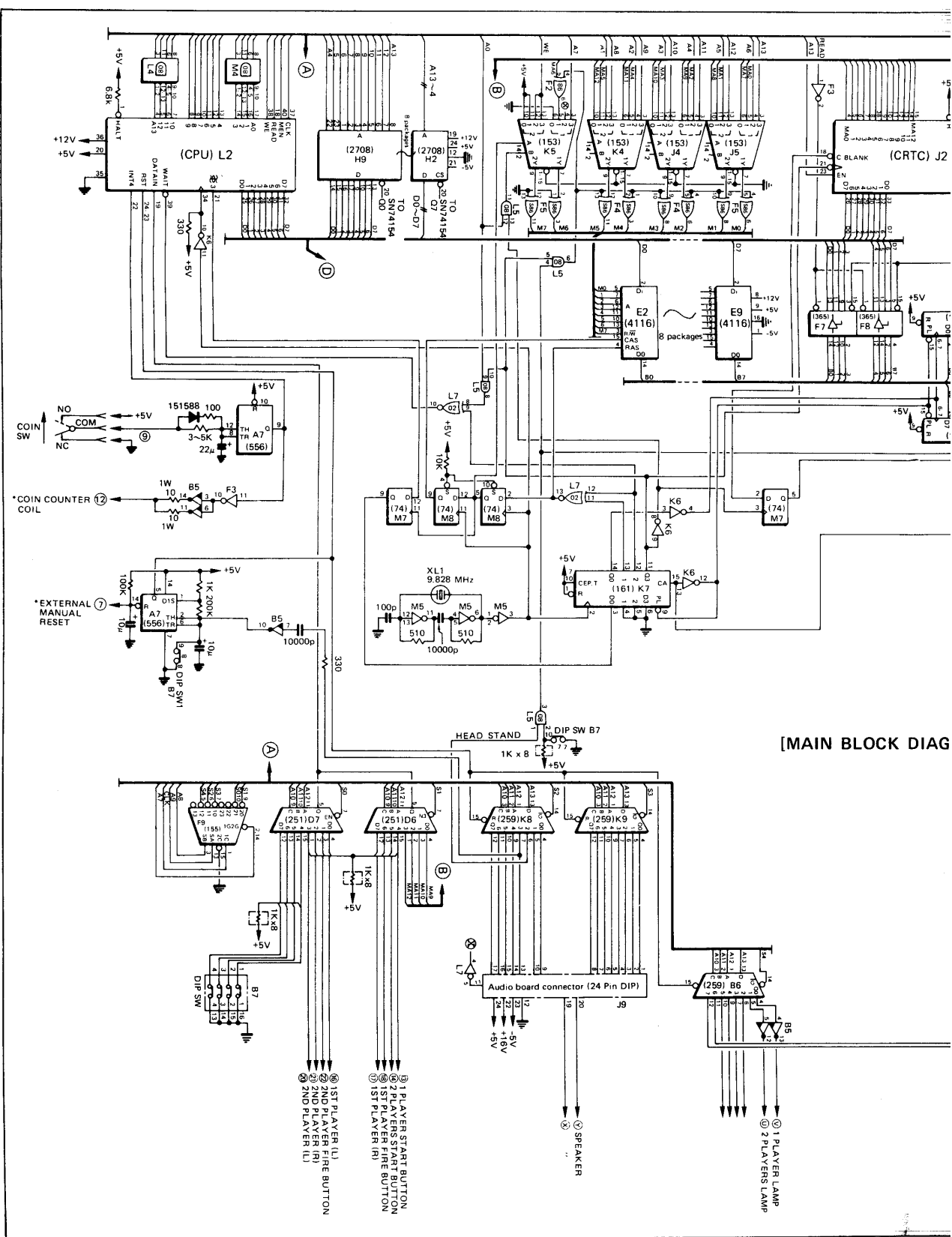
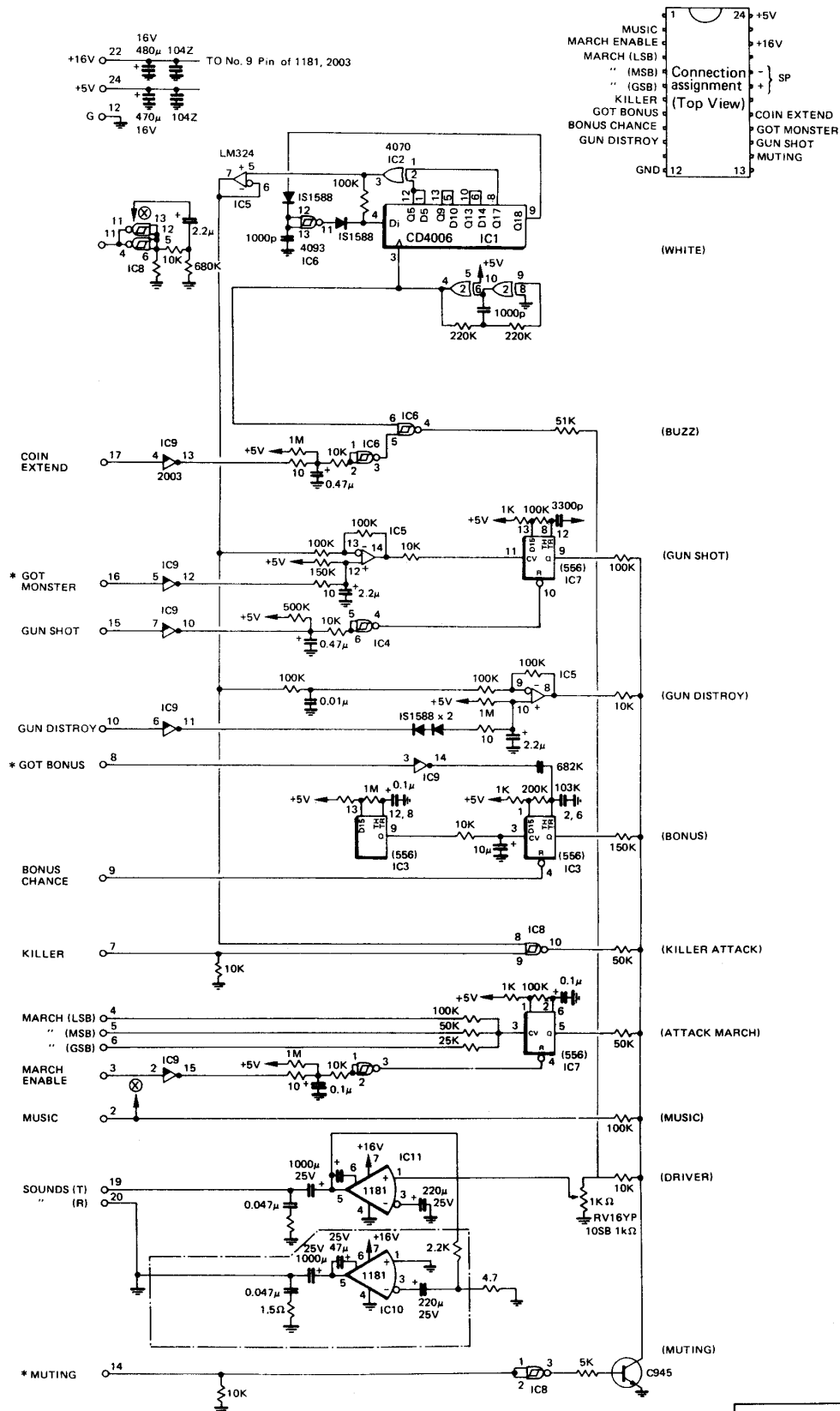


Fig. 8-1 Wiring Diagram





# SOUND BLOCK DIAGRAM



7907B

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